

**Quality Assurance Project Plan: Fish/Decapod Tissue Chemistry Analysis and Fish Community Survey
Lower Passaic River Restoration Project
Responses to EPA Comments On the July 24, 2009 Revised Draft**



Response to EPA Comments on *Quality Assurance Project Plan, Fish and Decapod Crustacean Tissue Collection for Chemical Analysis and Fish Community Survey, Revised Draft, July 24, 2009*

No.	Comment	Response	Discussion
General Comments received July 31, 2009			
1	Page vi, second bullet - change "may collect" to "may analyze." As was discussed during a call on July 29 th , both target and alternate species will be collected, with determination of which fish to analyze to occur after the sample collection for each zone.	Windward	The second bullet on Page vi was changed to say, "If insufficient tissue is collected, alternate species may be analyzed...." The phrase was also revised in WS 10 and WS 11.
2	Page vi, third bullet - add a statement indicating consultation with EPA will occur to evaluate if additional sampling time, location, or shortened analytical list should be pursued.	Windward	A statement was added below the bullets on Page vi to emphasize that USEPA will be consulted on decisions about modifications to the sample design if insufficient tissue of target species is collected. In addition, a sentence pointing the reader to the flow charts (Attachment W) was added on Page vi and to WS 10 and WS 11.
3	Table ES-2, footnote c - please add text that indicates the purpose of collecting co-located sediment and biota is to derive site-specific biota-sediment accumulation factors. Also include that, in addition to chemical residues for these samples, lipid content for tissues and organic carbon content for sediment will be analyzed. This text should also be added to footnote number 2 on page i.	Windward	The text was added to Footnote c in Table ES-2, Footnote 2 on Page i, Footnote e in Table 11-1 in WS 11, and Footnote c in Table 1 in Attachment Q.

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4	-- The above comments should also be added to the appropriate sections of text in the document.	Windward	<p>In addition to making revisions in the specific locations noted in the comments, changes based on comments 1 to 3 were made throughout the document as follows:</p> <p><u>Comment 1</u> The phrase "may collect" was changed to "may analyze" in WS 10 and WS 11.</p> <p><u>Comment 2</u> The following sentence was added to the problem definition, WS 10, "Once sampling efforts are complete, an individual and compositing plan memorandum will be prepared for discussion and approval by USEPA."</p> <p><u>Comment 3</u> Text was added to Footnote e to Table 11-1 in WS 11 and Footnote c to Table 1 in Attachment Q. The footnotes now reads, "Blue crab, crayfish, mummichog, and darter or killifish samples will be co-located with sediment samples collected as part of the benthic invertebrate QAPP in order to derive site-specific biota-sediment accumulation factors. In addition to chemical residues for these samples, lipid content for tissues and organic carbon content for sediment will be analyzed."</p>
5	Page 55, third bullet, last sentence - The text states that no fish will be retained for chemical analysis during future community surveys. However, we have discussed that additional samples may be collected if the results of the first sampling event are not adequate. Please clarify.	Windward	<p>The last sentence in the third bullet on Page 55 (sixth bullet in WS 11, HHRA Assessment Endpoint, What types of data are needed section) was revised to say, "During the second and third surveys, community survey observations will be compiled for all fish caught; fish will not be retained for chemistry analysis during these community surveys unless additional samples are needed based on results from the first survey and agreed to by CPG and USEPA."</p>

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6	Page 63, first sentence - The statement "If individual fish collected from the field are of a sufficient size to meet analytical mass requirements (and QC requirements and splits), these fish will be analyzed as separate samples in addition to composite samples, as requested by USEPA" has appeared several times in the QAPP. The text seem to indicate that all fish will be composited at some point in time and if additional tissue mass is available after compositing, then the remaining tissue will be analyzed as an individual sample. This text is confusing. Analysis of individual fish is the preferred method if sufficient sample mass is available. Please remove and/or clarify this statement throughout the document.	Windward	The phrase "in addition to composite samples" was deleted from sentences where it occurred in the document: WS 10 (Page 49), WS 11 (Pages 55, 57, and 62), WS 17 (Page 129), Attachment O (Page 274) and Attachment Q (Page 2).
7	Comment 95 - Eel fillets should be analyzed with the skin on, as they are often prepared this way.	AECOM/ Windward	Per agreement with USEPA in the August 4, 2009, call and following USEPA 2000 tissue sample preparation guidance, American eel fillets will be analyzed with skin off. The skins will be analyzed with the carcass.
8	Comment #1 from the EPA call notes. It would be helpful to briefly describe the rationale for the decision not to include herbicides.	Windward	Footnote c was added to Table ES-3 in the ES, which describes the primary reasons herbicides are not included as an analyte for tissue. The footnote is as follows: "Per agreement between USEPA and CPG, herbicides are not included for analysis for the following reasons: 1) there are no published methods for herbicides in tissue, 2) herbicides are infrequently detected in recent studies, 3) the likely levels of detection are below levels to be toxic to wildlife, and the bioaccumulation potential is low. Windward is currently drafting a memorandum explaining the above points in more detail for USEPA."

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Comments received via e-mail 8/3/09

No.	Comment	Response	Discussion
Comments received via e-mail August 3, 2009			
9	Please provide a copy of Alpha Analytical's Lipid SOPs (SOP No.OP-015, Percent Lipids Determination, Revision 1.0, 8/26/02 and SOP No. OP-004. Extraction of Soil, Tissue, Vegetation and Sediment Samples by Pressurized Fluid Extraction, Revision 2.1, 3/04/03) as soon as possible for our review.	Windward	The requested SOPs were originally provided in Attachment T and were provided to USEPA on August 4, 2009. Per the agreement between CPG and USEPA on August 5, 2009, the lipid method has been changed to the Bligh-Dyer method. Attachment T and WS 12, 15, 19, 20, 23, 24, 28, and 30 have been revised to reflect that change.
10	<p>Comment 8 (Page 4): The CPG response does not address the question of why the fish dose analysis ought to be limited to just non-bioaccumulating COPECs. As an example, a pesticide could be so high in a dietary item that it resulted in an acute (mortality) response in the exposed fish. Since exposed fish die, tissue residue data would be inadequate to evaluate this particular hazard. The dose- and residue-based analyses should be complementary and comprehensive.</p> <p><u>Original comment:</u> ES 3, Table ES 1, Ecological Risk Assessment Please provide justification for why the dietary evaluation of fish/decapods is limited to PAHs and metals only.</p> <p><u>Response:</u> Language clarifying the justification for limiting the dietary evaluation of fish/decapods to PAHs and metals has been added in Section ES 3 and Worksheet 11 as follows: "This evaluation will be limited to PAHs and metals, inasmuch as exposure to these chemical groups using a tissue-residue approach is not appropriate because PAHs and most metals are metabolized or otherwise regulated by fish."</p>	Windward	The language limiting dietary evaluation of fish/decapods to PAHs and metals has been removed from the text on Pages ii and iii, WK 11, and Table ES-1. Fish dietary dosage will be evaluated on a chemical by chemical basis and in discussions with USEPA.

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11	<p>Comment 16 (Page 6) and similar comments: We would like to have an additional conversation about the flow charts that were provided and the compositing process.</p> <p>In order to minimize situations when not enough samples are collected, or when options for compositing are limited, we recommend either (1) sample continuously for 5 deployments and record/sample all (target and alternative) individual collected for future compositing, regardless of the number of fish caught or (2) indicate on Table 1 in Attachment O, a percentage of individuals needed in addition to the minimum proposed amount to assure that enough sample mass is collected.</p> <p>Overall, The current plan is to collect every organism on the list that is captured in the field, tag it, and save it. Once sample collection in a zone is completed, then EPA, in conjunction with the CPG, will decide the best way to composite the samples. If we are short on sample mass, there are four options:</p> <ul style="list-style-type: none"> (1) collect more organisms (2) eliminate some chemical analyses (3) combine same species from other stations (4) combine different species from same stations <p>Option 1 may be used if we are close to obtaining the correct amount for a specific species.</p> <p>Option 2 is probably going to be the most selected choice if we do not get enough tissue mass.</p> <p>Option 3 could be used for larger fish that may have larger home ranges, although they should be big enough for individual samples.</p> <p>Option 4 is an option that will likely not be used, but it may be a valid option in select circumstances, with EPA concurrence.</p> <p>These options should be identified in the biota flowcharts in the box that says "Notify EPA" and it should be made clear that EPA ultimately has to make these decisions.</p>	Windward	<p>The following three options that outline the decision process if insufficient tissue is collected have been added to the three flowcharts:</p> <ul style="list-style-type: none"> (1) collect more organisms (2) eliminate some chemical analyses (3) combine same species from other stations <p>In addition, Option 4, combine different species from same stations, was added to the flowcharts for small forage fish and macroinvertebrates, and a footnote was added to these same flowcharts to say, "It may be necessary to composite across species (for darter or killifish/for crayfish), which may be acceptable given their similar life histories, if sufficient tissue mass is not available after five attempts or if the individuals cannot be identified to the species level."</p> <p>The options have been added to the box after Attempt 5 that says, "Notify USEPA and discuss options".</p> <p>Per agreement between USEPA and CPG in the August 4, 2009, call, the flow charts have been added to the QAPP as Attachment W.</p> <p>A statement has been added to the QAPP on Pages vi, 52 (WS 10) and 64 (WS 11) saying, "Per agreement between USEPA and CPG, flow charts documenting the general decision process that will be implemented during the collection of samples in the field have been prepared and are in Attachment W."</p> <p>Per the call with USEPA on August 5, 2009, the Flow charts have also been updated to say that the target tissue is "at least 150 g [to be discussed] with USEPA)."</p>

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12	Comment 24 (Page 8): Note that we have contacted Ewa Konieczna, the Maxxam Analytics QA officer, to obtain more extensive SOPs. In particular, we are reviewing the Maxxam PAH method to determine how this method has been modified for tissue, since it is based upon a modified version of the California Air Resources Board (CARB) 429, which is actually an air method.	Windward	Comment noted.
13	Comment 55 (Page 18): The response indicates that the units in Worksheet 15 have been modified to represent wet weight. Malcolm Pirnie, Inc. and Battelle request that the CPG confirm that all the reference limits listed are actually in wet weight since labs often determine and express method detection limits are dry weight.	Windward	All reference limits were confirmed by the laboratories to be in wet weight, with the exception of the SVOC. The SVOC units were deleted in the last two columns because dry or wet does not specifically apply because the MDL was conducted with spikes in the extraction solution rather than a specific matrix. The wet weight units in the last two columns of the SVOC table in WS 15 has been removed (and language added to footnote c). All other wet weight units were confirmed and are unchanged in WS 15.
14	Comment 56 (Page 18): It is still not possible to determine how the DQLs were developed and whether they represent a sufficiently conservative approach for identifying appropriate analytical detection levels. The information provided in Attachment S is insufficient to independently calculate the ecological DQLs as no TRVs are provided and full references not provided. There was no response to the comment that a number of DQLs did not appear to be adequately conservative. Moreover, there appear to be inconsistencies between the information provided in Attachment S and that provided in Worksheet 15. For instance, the PQL for mercury is given as 0.0135 mg/kg ww (noted previously as seeming high) whereas the selected ecological DQL in Table 2 of Attachment S presents a value of 0.0086 mg/kg ww.	Windward	Per agreement with USEPA from the January 2009 FSP2 Workshop, TRVs would not be provided in the QAPPs. Rather, as stated in Section 1 of the Problem Formulation Document, a TRV memorandum will be provide to USEPA outlining the criteria for TRV selection and the Resulting TRVs. The DQLs and project quantitation limits were revised in Worksheet 15 in the PCB congener, PAH, alkylated PAH, organochlorine pesticide, metals (zinc), selenium, mercury, methylmercury, and SVOCs tables to coincide with more conservative thresholds that are consistent with Attachment S. With the exception of the SVOCs, all of the laboratory quantitation limits were below the revised DQLs and project quantitation limits. The SVOC compounds for which the revised DQLs and project quantitation limits exceeded the laboratory quantitation limit will also be analyzed by the PAH HRGC/HRMS method. Note that the HRGC/HRMS method meets the DQLs for these compounds. As stated in Footnote d in the SVOC table in WS 15, the results from the PAH HRGC/HRMS will take precedence over the SVOC results. Please note the BOLD indicates chemicals for which achievable laboratory limits exceed the project quantitation goal

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			(as noted in WS 15). Per discussion with USEPA on August 5, 2009, Windward is currently comparing DQLs from the Tissue QAPP to DQLs in the PAR and will continue to give USEPA information to ensure the quantitation limits are adequate for risk assessment purposes. The laboratories have also indicated these quantitation limits are the lowest available limits.
15	<p>Comment 28 (Page 9): The requested language changes were not located in Worksheet 9.</p> <p><u>Original comment:</u> WS 9, Project Scoping Session Participants Sheet Provide current status of action items listed. In the Consensus Decisions section, reference in first bullet item to "action items below" is no longer accurate. Consider changing text in third bullet from "at this time" to "for this QAPP."</p>	Windward	<p>The request to provide the current status of action items was addressed in the revised QAPP by adding a summary of calls between USEPA and CPG into WS 9. The calls took place on June 25, June 30, July 8, July 15, and August 4, and the summaries list comments/decisions, action items, and consensus decisions at the time of the call.</p> <p>The third bullet in the Consensus Decisions section for the January meeting was already changed to read, "USEPA/PA and CPG agree that toxicity reference values (TRVs) for use in the ERA do not need to be developed for this QAPP."</p> <p>Per discussion with USEPA on August 4, 2009, USEPA agreed to look into the need to provide the status of action items in the QAPP vs a table or memo as a separate deliverable.</p>
16a	<p>Comment 36 (Page 12), and Comment 47 (Page 15): The responses do not appear to answer the respective comment.</p> <p><u>Original comment 36:</u> WS 10, Project decision conditions The text states that in addition to composite samples, individual fish collected from the field that are of sufficient size to meet analytical mass requirements (and QC and split requirements) will be analyzed as separate samples. Please describe in the text how these individual samples will be used in relation to composite samples.</p> <p><u>Response:</u> Text stating that individual fish of sufficient size to meet analytical mass requirements will be analyzed as separate samples has been added. Analysis of individual fish instead of composites is being done per USEPA direction.</p>	Windward	<p>Response to Comment 16a (original Comment 36): Text has been added to WS 10 to say, "Once sampling efforts are complete, an individual and composing plan memorandum will be prepared for discussion and approval by USEPA."</p>

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16b	<p><u>Original Comment 47</u>: WS 11, How Much Data Are Needed...?</p> <p>We will provide additional guidance on the amount of data that is needed and should have a discussion prior to finalization of the QAPP.</p> <p>In the meantime, please confirm that the sample size calculation for the characterization of a relationship between sediment and mummichog tissue considered the potential use of both parametric testing (e.g., a Pearson Correlation) and non-parametric testing (e.g., Spearman's Correlation) for the dataset to be developed.</p>	Windward	<p>As stated in the July 24 response to comments, per discussions between CPG and USEPA, sample sizes have been revised and are presented in the Sample Size Estimate Term Sheet (Attachment V) that was developed with USEPA following the July 8, 2009, conference call (Term Sheet submitted to USEPA on July 16, 2009).</p> <p>In response to the comment on the sample size calculation for the characterization of a relationship between sediment and mummichog tissue, a parametric relationship provides a better prediction of sediment/tissue correlation and was, therefore, used to conduct the mummichog sample size calculation.</p> <p>Note that the following was added to the Problem Formulation Document "Biota-sediment accumulation factors (BSAFs) for small forage range fish (i.e., mummichog and darter/killifish species) and invertebrates will be calculated using co-located tissue and sediment chemistry data. Methods for calculation and use of BSAFs for the risk assessment will be described in the Risk Analysis and Risk Characterization Plan."</p>
17	Comment 37 (Page 12): Scientific names for the alternative species are not provided.	Windward	The species names for proposed alternate species have been added to the second bullet on page vi in Section ES-5, Overview of Tissue Chemistry Sampling Design.

No.	Comment	Response	Discussion
Final Comments received August 7, 2009			
1	Page vi, second bullet – the word "insufficient" is missing in the text on page vi (second bullet)	Windward	The word "insufficient" was added to the second bullet on Page vi.
2	Comment 8 -- Please also note that herbicides will be analyzed in the sediment as part of the benthic QAPP sampling event. In addition, the response should also appear in the main text on WS10.	Windward	The following sentence was added to the Footnote for Table ES-3: "Note, herbicides will be analyzed in sediment as part of the benthic invertebrate QAPP sampling effort." The entire footnote was added

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			to WS 10 in the text.
3	Comment 11 -- During the conference call on August 5th, we decided to remove the words "target" and "alternate" from the flow charts and collect all the target species from all locations.	Windward	The words "target" and "alternate" were removed from the flow charts where they had been associated with species.

Errata for the *Quality Assurance Project Plan, Fish and Decapod Crustacean Tissue Collection for Chemical Analysis and Fish Community Survey*

Errata Item	Section	Page Number	Description
1	Attachment O, Table 1 footnotes	278	Item c in Footnote e had a number in the hepatopancreas weight equation shown incorrectly. It has been corrected, and the equation is: Hepatopancreas weight = $0.092 \times BL - 5.23$
2	Worksheet 19	142	Chemical preservation was clarified to require a temperature of $< 0^{\circ}\text{C}$, and the dry ice requirement was deleted. Text was added to Footnote c and states, "When frozen samples for chemical analysis are couriered and the transit time is guaranteed to be less than 24 hours, wet ice may be used as a preservative. Based on communications between USEPA and CPG, ice requirements will be agreed upon prior to shipment of homogenates from Alpha Analytical to the other laboratories via overnight delivery."
3	Worksheet 27, Field Custody Procedures and Laboratory Sample Custody Procedures	165	Shipping requirements were revised as follows: "When frozen samples for chemical analysis are couriered and the transit time is guaranteed to be less than 24 hours, wet ice may be used during transit. Based on communications between USEPA and CPG, ice requirements will be agreed upon prior to shipment of homogenates for chemical analysis from Alpha Analytical to the other laboratories via overnight delivery."
4	Attachment N	269, 270	In Section VII Part A, No. 6; Section VII, Part B, No.5; and Section VII, text was added to include wet ice to be consistent with WS 19.
5	Addendum to Attachment O	283	In Section IV, No. 8, text was added to include wet ice to be consistent with WS 19.
6	Figure 3	NA	Per discussion with USEPA in the August 4, 2009, call, location LPR2C will be moved approximately 1,000 ft downstream provided that the habitat type is the same as that at the originally proposed location. This change in location will be a field modification change.